

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ  
In The Name Of ALLAH  
The Most Gracious, The Most Merciful





# Armed Forces College of Medicine AFCM



# **Drugs used to treat allergic rhinitis**

***Prof. Dr/ Omayma  
Khorshid***



# INTENDED LEARNING OBJECTIVES (ILO)



**By the end of this lecture the student**

**will be able to:**

1. Classify the drugs used in treatment of allergic rhinitis
2. Explain the mechanism of action, clinical uses and the most important adverse effects of drugs used in treatment of allergic rhinitis





# Allergic Rhinitis

- **Allergic Rhinitis** is characterized by sneezing, itchy nose/eyes, watery rhinorrhea, nasal congestion, and sometimes, a nonproductive cough.



# Allergic Rhinitis

- An attack may be **precipitated by inhalation of an allergen** (such as dust, pollen, or animal dander).
- The **foreign material interacts with mast cells** coated with IgE generated in response to a previous allergen exposure.
- The **mast cells release mediators**, such as histamine, leukotrienes, and chemotactic factors that **promote mucosal thickening** from edema and cellular infiltration.



# Drugs used in allergic rhinitis

## First line drugs

**Antihistamines and/or intranasal corticosteroids.**

**are preferred therapies for allergic rhinitis.**

## Others:

- **$\alpha$ -adrenergic agonists**
- **Intranasal cromolyn (for prophylaxis)**
- **LT antagonists (for prophylaxis)**



# Antihistamines (H1-receptor blockers)

- Useful for the management of symptoms of allergic rhinitis caused by histamine release (sneezing, watery rhinorrhea, itchy eyes/nose).
- They are more effective for prevention of symptoms, rather than treatment once symptoms have begun.
- Ophthalmic and nasal antihistamine drops



- First-generation antihistamines, such as diphenhydramine and chlorpheniramine, are usually not preferred due to adverse effects, such as sedation, performance impairment, and other anticholinergic effects
- The second-generation antihistamines (loratadine) are



# Steroids for allergic rhinitis

- **Beclomethasone, fluticasone.**
- **Nasal spray**
- To avoid systemic absorption, patients should be instructed **not to inhale deeply**



# Steroids for allergic rhinitis

- Side effects:

- 1) Nasal irritation,
- 2) Sore throat,
- 3) Nosebleed
- 4) **Rarely** candidiasis



**Which of the following drugs is considered first line in the treatment of allergic rhinitis ?**

- a) Salmeterol
- b) Beclomethasone
- c) Phenylephrine
- d) Cromolyn
- e) Montelukast



# $\alpha$ -Adrenergic agonists

- **Short-acting**  $\alpha$ -adrenergic agonists “nasal decongestants” such as phenylephrine, constrict dilated arterioles in the nasal mucosa and reduce airway resistance.
- Aerosol □ rapid onset of action & few systemic effects.



- $\alpha$ -adrenergic agonist intranasal formulations:

- Not used longer than 3 days due to :  
the risk of rebound nasal congestion

(i.e have no place in the long-term treatment)

- Administration of **Oral  $\alpha$ -adrenergic**



Which of the following drugs would be best for treatment of an acute attack of asthma?

- a) Inhaled Beclomethasone
- b) Inhaled tiotropium
- c) Inhaled Salbutamol
- d) Inhaled Formoterol
- e) Inhaled Cromolyn



- Oral medications are popular for the treatment of asthma in children because young children may have difficulty with the proper use of aerosol inhalers. Which of the following is an orally active blocker of leukotriene receptors?

- (A) Salbutamol
- (B) Aminophylline
- (C) Zafirlukast
- (D) Ipratropium
- (E) Zileuton



Match the following agents to the described clinical situation:

- a) Zileuton
- b) Salmeterol
- c) Theophylline
- d) Montelukast
- e) Beclomethasone

- A 21-year-old woman with moderately severe asthma on three-drug treatment has elevated liver function tests thought to be caused by one of her medications.
- A 16-year-old female is placed on multiple medications. She has been taking her medications as instructed, but one of the medications is causing her to have tachycardia, nausea, and insomnia. She has been informed of the need to measure serum levels of this



# Key points summary

## ➤ Antihistamines:

- 1st generation: **NOT preferred** due to adverse effects
- 2nd generation (e.g Loratadine): **better tolerated.**
- Dosage forms used: **Ophthalmic and nasal antihistamine drops**

## ➤ Corticosteroids:

- Beclomethasone, fluticasone.
- Nasal spray

## ➤ $\alpha$ -Adrenergic agonists: **NOT more than 3 days** → **rebound nasal congestion**

- “nasal decongestants” such as phenylephrine [**no place** in the **long-term** treatment]
- Aerosol → rapid onset of action & few systemic effects.
- constrict dilated arterioles in the nasal mucosa and reduce airway resistance.
- Administration of Oral  $\alpha$ -adrenergic agonist formulations:
  - results in a longer duration of action but also increased systemic side effects.

## SUGGESTED TEXTBOOKS



1. Whalen, K., Finkel, R., & Panavelil, T. A. (2018) Lippincott's Illustrated Reviews: Pharmacology (7<sup>th</sup> edition.). Philadelphia: Wolters Kluwer
2. Katzung BG, Trevor AJ. (2018). Basic & Clinical Pharmacology (14<sup>th</sup> edition) New York: McGraw-Hill Medical.



